## REMARKS/ARGRUMENTS

Claims 1-49 are pending. Claims 1-49 stand rejected in the Office Action mailed September 24, 2003.

Claims 1-28 are rejected under 35 U.S.C. §103(a) as being unpatentable over US Patent Number 6,438,266 of Bajaj et. al (hereafter Bajaj) in view US Patent Number 6,476,805 of Shum et. al (hereafter Shum).

Claims 29-49 are rejected under 35 U.S.C. §103(a) as being unpatentable over Bajaj and the alleged knowledge in the art.

Claims 1, 8, 15, 22, 29, 34, 39, and 44 have been amended. No new matter has been added.

## Rejections Under 35 U.S.C. §103

The Examiner rejected claims 1-28 under 35 U.S.C. §103(a) as being unpatentable over Bajaj and Shum. Claims 1-28 are patentable under 35 U.S.C. §103 in view of the references cited by the Examiner. Neither of the cited references teach (nor does the Office Action cite any portion which even suggests) the presently claimed feature of performing scalar quantization on the three-dimensional graphics model geometric data;...wherein the three-dimensional graphics model geometric data area surface normal vectors.

In regard to the rejection of claim 1, the Examiner has stated in part that:

> Bajaj discloses a method comprising...performing scalar quantization on the graphic data (col. 17, line 13)....
> Bajaj does not disclose encoding the graphic data differentially.
> Shum discloses using differential encoding. (col. 25, lines 59-65).

(9/24/03, Office Action, p. 2)

Applicant maintain that there is no motivation to combine Bajaj and Shum. Infact, they teach away from each other

In regard to the rejection of claim 1, even if Bajaj and Shum were combined, such a combination would lack one or more features of claim 1. Claim 1 has been amended to recite the

feature of performing scalar quantization on the three-dimensional graphics model geometric data;...wherein the three – dimensional graphics model geometric data are surface normal vectors. (Emphasis added) The Examiner states that "Bajaj further discloses where the 3D geographic data includes normalized normal vectors (col. 12, lines 1-2)." Applicant respectfully disagrees. Bajaj discloses a normalization step over coordinates of all vertices, in order to apply productive vector quantization. (Bajaj, col. 11, ll. 1-3) Bajaj's normalization relates to distributing vertices values less than 0.5. This, however is not "performing scalar quantization on ...*surface normal* vectors" as claimed by applicant in Claim 1.

Nor does Shum describe performing scalar quantization on the three-dimensional graphics model geometric data;...wherein the three-dimensional graphics model geometric data are surface normal vectors. (Claim 1, emphasis added). Shum describes techniques for spatial displacement estimation and multi-resolution operations on light fields. (Shum, title). Thus, Shum is not dealing with three dimensional graphics models, (as claimed in claim 1) but light fields. Shum states that "while the images of a light field are spatially related, temporal relationships between light field images are not fixed." (Shum, col. 10, ll. 6-8). Shum discusses that after forming wavelet blocks of a light field image, a compression unit codes the wavelet blocks by embedded zero-tree coding using successive approximation quantization and arithmetic coding. (Shum, col. 18, ll. 27-35) Shum distinguishes his successive approximation coding method from adaptive quantization, vector quantizaltion and scalar quantization. (Shum, col. 18, ll. 36-65). Thus, Shum does not describe performing scalar quantization on the three-dimensional graphics model;...wherein the three-dimensional graphics model geometric data are surface normal vectors as claimed by applicants' claim 1. Because neither Bajaj nor Shum disclose this feature as taught by applicants and given that claims 2-7 depend directly or indirectly from claim 1, applicants respectfully submit that claims 1-7 are not obvious under 35 U.S.C. §103(a) by Bajaj in view of Shum.

The Examiner also rejected independent claim 8 under 35 U.S.C. §103(a) for the reason set forth in the rejection of claim 1. Claim 8 discloses substantially similar limitations as claim 1, and recites "means for performing scalar quantization on the three-dimensional graphics model;...wherein the three-dimensional graphics model geometric data are surface normal vectors." (Emphasis added) Because, neither Bajaj nor Shum disclose this feature as taught by applicants for the reasons discussed above with regard to claim 1, applicants respectfully submit that claim 8 is not obvious under 35 U.S.C. §103(a) by Bajaj in view of Shum. Furthermore, because neither Bajaj nor disclose this feature as taught by applicants in independent claim 8 from which claims 9-14 depend, applicants respectfully submit that claims 8-14 are not obvious under 35 U.S.C. §103(a) by Bajaj in view of Shum.

The Examiner also rejected independent claim 15 under 35 U.S.C. §103(a) for the reason set forth in the rejection of claim 1. Claim 15 discloses substantially similar limitations as claim 1, and recites "performing scalar quantization on the three-dimensional graphics model; ...wherein the three-dimensional graphics model geometric data are surface normal vectors." (Emphasis added) Because, neither Bajaj nor Shum disclose this feature as taught by applicants for the reasons discussed above with regard to claim 1, applicants respectfully submit that claim 15 is not obvious under 35 U.S.C. §103(a) by Bajaj in view of Shum. Furthermore, because neither Bajaj nor Shum disclose this feature as taught by applicants in independent claim 15 from which claims 16-21 depend, applicants respectfully submit that claims 15-21 are patentable under 35 U.S.C. §103(a) over Bajaj and Shum.

The Examiner also rejected independent claim 22 under 35 U.S.C. §103(a) for the reason set forth in the rejection of claim 1. Claim 22 discloses substantially similar limitations as claim 1, and recites "the processor performs scalar quantization and parameterization on three-dimensional graphics model." (Emphasis added) Because, neither Bajaj nor Shum disclose this feature as taught by applicants for the reasons discussed above with regard to claim 1, applicants respectfully submit that claim 22 is not obvious under 35 U.S.C. §103(a) by Bajaj in view of

Shum. Furthermore, because neither Bajaj nor Shum disclose this feature as taught by applicants in independent claim 22 from which claims 23-28 depend, applicants respectfully submit that claims 22-28 are patentable under 35 U.S.C. §103(a) over Bajaj and Shum.

The Examiner rejected claims 29-49 under 35 U.S.C. §103(a) as being unpatentable over Bajaj and the alleged knowledge in the art. Claims 29-49 are patentable under 35 U.S.C. §103 in view of the reference cited by the Examiner. Bajaj does not teach (nor does the Office Action cite any portion which even suggests) the presently claimed feature of generating decompressed three-dimensional graphics model geometric data from the dequantized spherical coordinate values; wherein the three-dimensional graphics model geometric data are normalized surface normal vectors. (Amended claim 29)

In regard to the rejection of claim 29, the Examiner has stated in part that:

> Bajaj discloses generating actual quantized spherical coordinate values....Bajaj does not explicitly disclose deparameterization or dequantization. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to decode by deparameterization and dequantization of the encoded data.

(4/23/03, Office Action, p. 5)

In regard to the rejection of claim 29, even if Bajaj and the alleged knowledge were combined, such a combination would lack one or more features of claim 29. The Examiner states that "Bajaj further discloses where the 3D geographic data includes normalized normal vectors (col. 12, lines 1-2)." Applicant respectfully disagrees. Bajaj discloses a normalization step over coordinates of all vertices, in order to apply productive vector quantization. (Bajaj, col. 11, ll. 1-3) Bajaj's normalization relates to distributing vertices values less than 0.5. This, however is not "generating decompressed three-dimensional graphics model geometric data from the dequantized spherical coordinate values; wherein the three-dimensional graphics model geometric data are normalized surface normal vectors." as claimed by applicant in claim 29.

Because neither Bajaj nor the alleged knowledge disclose this feature as taught by applicants and given that claims 30-33 depend directly or indirectly from claim 29, applicants respectfully submit that claims 29-33 are not obvious under 35 U.S.C. §103(a) by Bajaj in view of the alleged knowledge.

The Examiner also rejected independent claim 34 under 35 U.S.C. §103(a) for the reason set forth in the rejection of claim 29. Claim 34 discloses substantially similar limitations as claim 29, and recites "means for generating decompressed three-dimensional graphics model geometric data from the dequantized spherical coordinate values; wherein the three-dimensional graphics model geometric data are surface normal vectors." (Emphasis added) Because, neither Bajaj nor the alleged knowledge disclose this feature as taught by applicants for the reasons discussed above with regard to claim 29, applicants respectfully submit that claim 34 is not obvious under 35 U.S.C. §103(a) by Bajaj in view of the alleged knowledge in the art. Furthermore, because neither Bajaj nor disclose this feature as taught by applicants in independent claim 34 from which claims 35-38 depend, applicants respectfully submit that claims 34-38 are not obvious under 35 U.S.C. §103(a) by Bajaj in view of the alleged knowledge in the art.

The Examiner also rejected independent claim 39 under 35 U.S.C. §103(a) for the reason set forth in the rejection of claim 29. Claim 39 discloses substantially similar limitations as claim 29, and recites "generating decompressed three-dimensional graphics model geometric data from the dequantized spherical coordinate values; wherein the three-dimensional graphics model geometric data are normalized surface normal vectors." (Emphasis added) Because, neither Bajaj nor the alleged knowledge disclose this feature as taught by applicants for the reasons discussed above with regard to claim 29, applicants respectfully submit that claim 39 is not obvious under 35 U.S.C. §103(a) by Bajaj in view of the alleged knowledge in the art. Furthermore, because neither Bajaj nor the alleged knowledge in the art disclose this feature as taught by applicants in independent claim 39 from which claims 40-43 depend, applicants respectfully submit that claims 39-43 are patentable under 35 U.S.C. §103(a) over Bajaj and the alleged knowledge in the art.

The Examiner also rejected independent claim 44 under 35 U.S.C. §103(a) for the reason set forth in the rejection of claim 29. Claim 44 discloses substantially similar limitations as claim 29, and recites "a processor, wherein the processor performs deparameterization and scalar dequantization on compressed three-dimensional graphics model geometric data, and wherein the processor returns surface normal vectors." (Emphasis added) Because, neither Bajaj nor the alleged knowledge in the art disclose this feature as taught by applicants for the reasons discussed above with regard to claim 29, applicants respectfully submit that claim 44 is not obvious under 35 U.S.C. §103(a) by Bajaj in view of the alleged knowledge in the art. Furthermore, because neither Bajaj nor the alleged knowledge in the art disclose this feature as taught by applicants in independent claim 44 from which claims 45-49 depend, applicants respectfully submit that claims 44-49 are patentable under 35 U.S.C. §103(a) over Bajaj and the alleged knowledge in the art.

Applicants respectfully submit that all rejections have been overcome. Consideration of this amendment should lead to favorable action that would overcome all remaining grounds of objection and/or rejection. If there are any additional charges, please charge Deposit Account No. 02-2666

Respectfully submitted,

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Date: October 30th, 2003

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